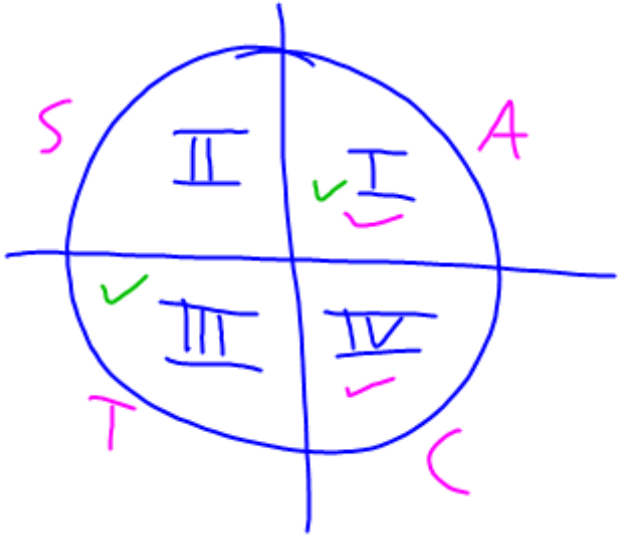
13 in 1.3

$\sin\theta = \frac{y}{r}$ → pos.

$\csc\theta = \frac{r}{y}$ → pos.

28-32 in 1.4



1 in 1.4

$a = 1$

12 in 1.4

Find $\sec\theta$ if $\cos\theta = \frac{3}{2}$

can't be bigger than 1

21 in 1.4

$$\tan\theta = \frac{1}{\cot\theta}$$

$$\tan(3\theta - 4^\circ) = \frac{1}{\cot(5\theta - 8)}$$

$$\tan(3\theta - 4) = \tan(5\theta - 8)$$

$$3\theta - 4 = 5\theta - 8$$

$$4 = 2\theta$$

$$\theta = 2$$

41 in 1.3

$\sec^2 180 - 3\sin^2 360 + 2\cos 180°$

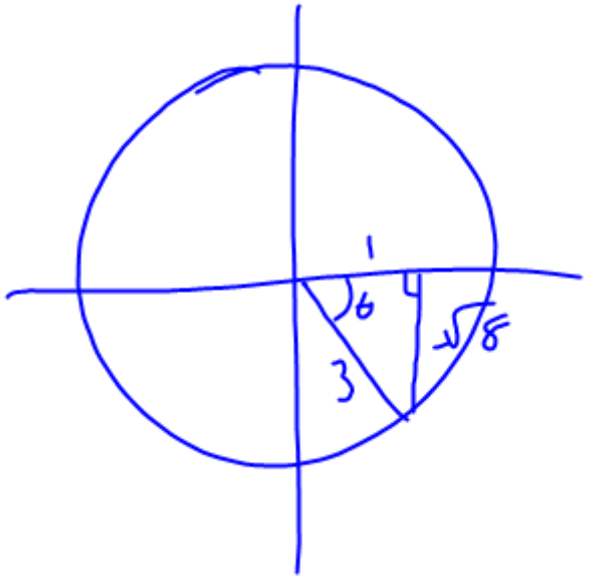
$x = -1$	$x = 1$	$x = -1$
$y = 0$	$y = 0$	$y = 0$
$r = 1$	$r = 1$	$r = 1$
$\sec 180°$	$\sin 360°$	$\cos 180°$
$(-1)^2$	$3 \cdot (0)^2$	$2 \cdot -1$
$1 -$	$0 +$	-2

$= -1$

55 in 1.4

Find $\tan\theta$ if $\sec\theta = 3$ in Quad IV

$\sec\theta = \frac{r}{x} = \frac{3}{1}$



$1^2 + y^2 = 3^2$

$y = \sqrt{8}$ $\sqrt{4}\cdot\sqrt{2}$

$\tan = \frac{y}{x} = -\frac{\sqrt{8}}{1} = -\frac{2\sqrt{2}}{1} = -2\sqrt{2}$

70 in 1.4

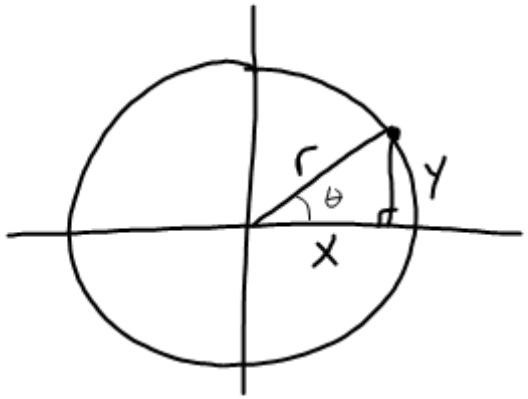
$$\cot\theta = \frac{1}{\tan\theta} = -1.49586$$

$$\rightarrow \tan\theta = \frac{1}{-1.49586}$$

$$\theta = \tan^{-1}\left(\frac{1}{1.49586}\right)$$

Ch. 1 Review

① Trig Basics

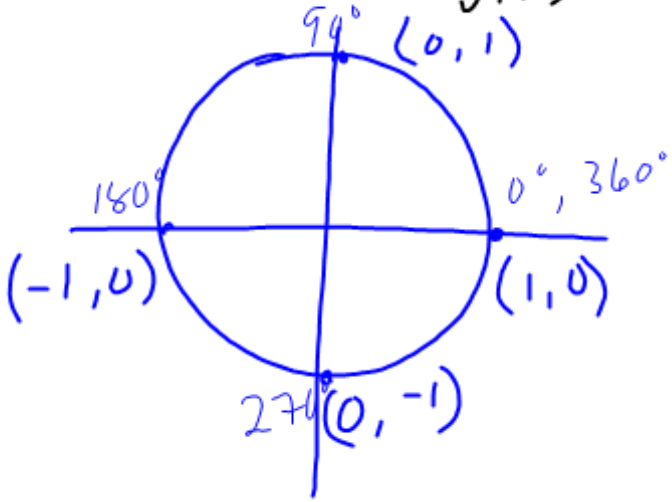


$\sin\theta = \frac{y}{r}$ $\quad \csc\theta = \frac{r}{y}$

$\cos\theta = \frac{x}{r}$ $\quad \sec\theta = \frac{r}{x}$

$\tan\theta = \frac{y}{x}$ $\quad \cot\theta = \frac{x}{y}$

② Quadrantal Angles



$\cos\theta = \frac{x}{1} \Rightarrow \cos\theta = x$

$\sin\theta = \frac{y}{1} \Rightarrow \sin\theta = y$

$\tan\theta = \frac{y}{x}$

$\cot\theta = \frac{x}{y}$

$\csc\theta = \frac{1}{y}$

$\sec\theta = \frac{1}{x}$

③ Ranges

$-1 \le \sin\theta \le 1$

$-1 \le \cos\theta \le 1$

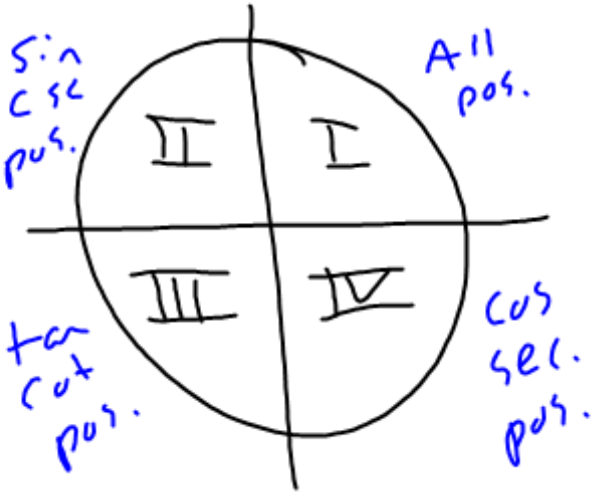
$-\infty < \tan\theta < \infty$

$\csc\theta \le -1$ and $1 \le \csc\theta$

$\sec\theta \le -1$ and $1 \le \sec\theta$

$-\infty < \cot\theta < \infty$

④ Signs of Trig Functions



All Silver Ten Cups

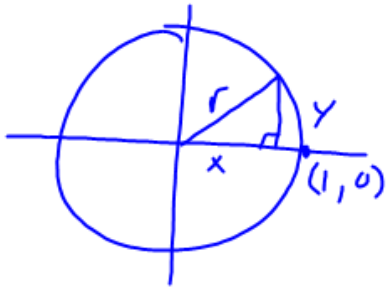
(5) Reciprocal Identities

$$\sin\theta = \frac{1}{\csc\theta} \qquad \csc\theta = \frac{1}{\sin\theta}$$

$$\cos\theta = \frac{1}{\sec\theta} \qquad \sec\theta = \frac{1}{\cos\theta}$$

$$\tan\theta = \frac{1}{\cot\theta} \qquad \cot\theta = \frac{1}{\tan\theta}$$

(6) Pythagorean Identities



$x^2 + y^2 = r^2$

Divide by r^2

$\frac{x^2}{r^2} + \frac{y^2}{r^2} = \frac{r^2}{r^2}$

$\left(\frac{x}{r}\right)^2 + \left(\frac{y}{r}\right)^2 = 1$

$\boxed{\cos^2\theta + \sin^2\theta = 1}$

Divide by y^2

$\frac{x^2}{y^2} + \frac{y^2}{y^2} = \frac{r^2}{y^2}$

$\boxed{\cot^2\theta + 1 = \csc^2\theta}$

Divide by x^2

$\frac{x^2}{x^2} + \frac{y^2}{x^2} = \frac{r^2}{x^2}$

$\boxed{1 + \tan^2\theta = \sec^2\theta}$

Quotient Identities

$$\frac{\sin\theta}{\cos\theta} = \frac{\frac{y}{r}}{\frac{x}{r}} \Rightarrow \frac{y}{r} \cdot \frac{r}{x} = \frac{y}{x} = \tan\theta$$

$$\tan\theta = \frac{\sin\theta}{\cos\theta}$$

$$\cot\theta = \frac{\cos\theta}{\sin\theta}$$

$\Rightarrow$ Sect. 1.1 #63-68(2)

Sect. 1.2 #62

Sect. 1.3 #27, 42, 60

Sect. 1.4 #24, 57, 60

Ch. Review p. 39 #1-3, 6, 8, 10, 12, 16, 18, 24-27, 40, 44